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DOMINION OF CANADA—DEPARTMENT OF AGRICULTURE

IRRIGATING A PRAIRIE FARM GARDEN

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A FIELD OF BEANS BEING IRRIGATED

A small quantity of water from the main head ditch, shown in the foreground, is allowed to flow down between the rows of beans for a sufficient length of time to allow the soil on which the plants are standing to become thoroughly soaked.

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IRRIGATING A PRAIRIE FARM GARDEN

There are many farmers on the prairies who for the first time in their experience will have water to irrigate their gardens available from small irrigation dams or from dugouts. Few if any of these have ever seen irrigation water applied to a garden and are uncertain how to proceed. Should they attempt to post themselves by obtaining a book on irrigation and reading up on the matter, they are apt to become even more bewildered. So much is said concerning the laying out and grading of the field ditches, land levelling, diversion gates, and a score of similar details along with so many cautions about things that an irrigator should not do, including the danger of over-irrigating, that the beginner is afraid to do anything for fear he may be doing wrong.

The object of this pamphlet is to point out to the uninitiated that the irrigating of a garden is really a very simple matter, easily done by any intelligent farmer.

The city man irrigates his garden when it requires it, using the hose. If he is wise he removes the nozzle and allows the water from the end of the hose to run between the rows until the soil is thoroughly soaked. This is precisely what the farmer does when he irrigates his garden, except that his water is taken from a small ditch or plough furrow instead of a hose, and he usually runs it down between a number of rows at the same time instead of down only one furrow, although the amount of water turned down any furrow may not be greater than the amount obtained from the hose used by the city man.

FURROW IRRIGATING

A garden is irrigated by the furrow system of irrigation as distinguished from the flooding system that is commonly used with grain or hay land. With the latter the field ditches are run at right angles to the slope of the land and the water running in the ditch is dammed and allowed to flood over the land to the next field ditch below, spreading out in its progress from the upper ditch to the lower one. By this method the surface of the entire field is wet. With gardens that are planted in rows and intertilled, the rows of the various varieties are so placed that water from the upper side of the garden can be turned in and will run down in furrows between the rows in an uninterrupted manner to the lower end. This, in brief, is all there is to the irrigating of a farm garden.

The remainder of this pamphlet will deal with some suggestions that it is hoped will help the beginner to make a success of his first year's trial with irrigation.

PREPARATION OF THE LAND

A fact which a great many dry-land farmers fail to realize is that an irrigated garden is essentially a dry-land garden except that water is supplied to the growing plants at the proper time or when they need it most. The recommendations concerning cultural practices for the dry-land garden, such as incorporating well-rotted manure into the soil, smoothing the soil in the spring, and cultivating frequently during the growing season, are equally important for the irrigated garden.

Before starting to plant the seeds in the garden the slope of the land surface should be studied as the rows should be planted in the direction in which water will run most readily down a furrow made between the rows of plants from the upper end of the rows to the lower end. To facilitate the uninterrupted

flow of the water down this furrow there should be as few bumps or depressions as possible. In other words, the surface of the land should be as smooth as it can be made. On older irrigation projects much time and effort are often expended to make sure that this smooth condition is established and maintained from year to year but for the beginner it is suggested that he smooth up the surface of his land as well as he can with the facilities he has at hand. After he has had one season's experience he will understand what further preparation of the surface is required to simplify irrigation and this work can be done in the fall after the garden crops have been harvested.

If the beginner is fortunate enough to have the use of some modern power-driven land levelling equipment to prepare the land the year previous to planting, so much the better, but it should be definitely understood that, desirable as this may be, it is *not* absolutely necessary. No farmer who might have water available for irrigation should be deterred from arranging to make use of it because no previous levelling had been done on the land.

SURFACE DRAINAGE

In the previous paragraph stress has been laid on the fact that the rows of vegetables should be planted in such a direction as to allow water to run from the upper to the lower end in an uninterrupted manner. The next point to be borne in mind is that provision should be made to allow any excess water to escape and not be backed up or "pond" indefinitely on the growing crop. In other words, surface drainage for excess water is of vital importance. Few garden crops will tolerate standing water for more than a few hours without being definitely injured. On a properly laid out garden this condition does not occur.

HOW TO IRRIGATE

The furrow system of irrigating is the simplest of all methods of irrigation and incidentally it has been practised since the beginning of written history, for some of the records of the most ancient civilization make reference to it.

The ditch from which the irrigation water is to be taken is naturally at the top end of the rows. The water in this small ditch is dammed and a small quantity is taken out and allowed to run down one or more rows in a depression or slight furrow between the rows. Furrows may be made with some form of cultivator or if the garden is very small, with a hoe.

The ideal method in furrow irrigation is to allow a small trickle of water to run down the furrow for a sufficient number of hours to thoroughly wet the space on which the plants are growing without the water actually touching the plants. Although it is desirable not to flood the land and so avoid baking the surface soil, it must be understood that the plants will not be seriously injured provided the water happens to flood over all of the ground.

WHEN TO IRRIGATE

Perhaps the most common sense answer to the question of when to irrigate is when the soil is dry, and in general this is the principle by which the farmer should be governed in handling an irrigated garden. The soil should be kept moist during the growing season but not waterlogged.

On the prairie in most seasons it is possible to depend on rain to germinate the seeds. This is extremely desirable for it is much easier for the novice to irrigate a growing crop than it is to attempt to irrigate one up, because of the danger of washing the seeds away, or the possibility of having the land bake so hard at the surface as to prevent the emergence of the seedlings.

Examination of the soil by the use of a shovel will indicate quickly to the gardener when the first irrigation should be applied. A good rule to follow in determining whether sufficient water has been applied in an irrigation is to resort to the shovel again and find out whether the ground has been thoroughly wet to at least eighteen inches or two feet deep. Incidentally it is important to make sure that the moisture is this deep directly underneath the plants and not just beneath the little furrow between the rows in which the water has been running.

In average seasons one or at most to thorough irrigations are sufficient to produce a crop.

To get the best results different crops require irrigation at different times, but in this pamphlet space will not allow discussion of these points. If the gardener follows the rule of making sure that the soil is kept moist, especially while there is large leaf surface as in mid and late summer, he will not go far astray. If possible, potatoes should not be given their first irrigation until about the time that blooms start to appear, and then should be given light frequent irrigations.

CULTIVATION

The maintenance of ideal moisture conditions in an irrigated garden naturally stimulates greater weed growth than in a dry-land garden. Consequently frequent cultivation should be resorted to and particular attention given to the eradication of weeds.